

FIG 1

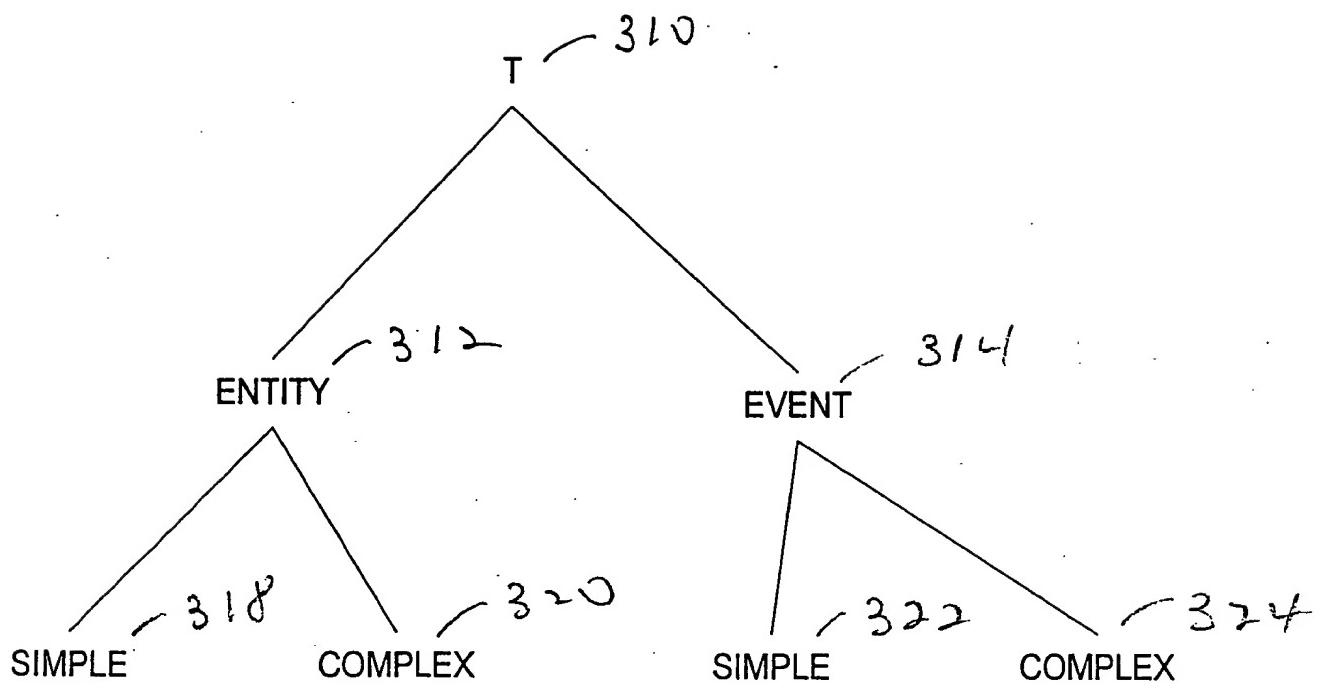
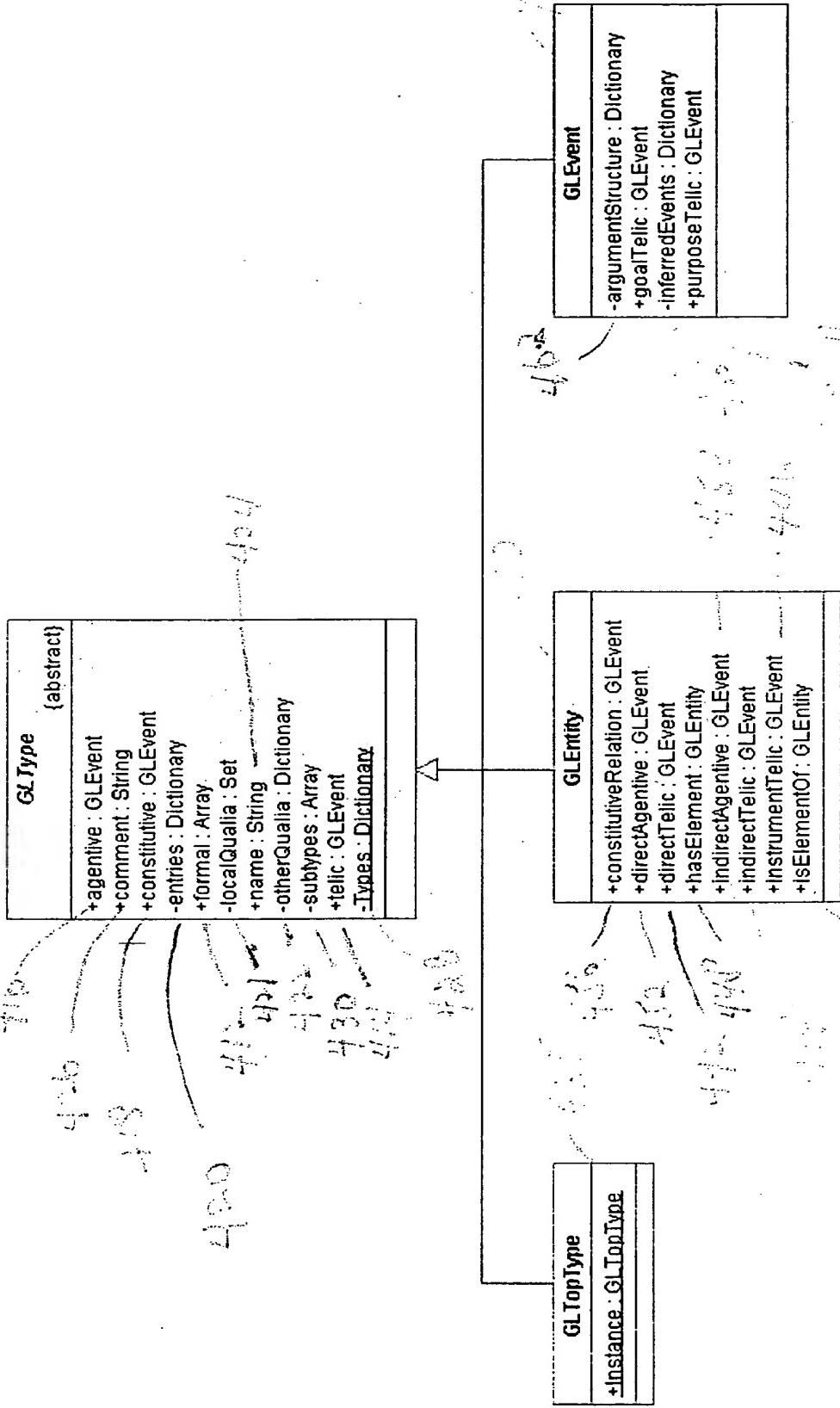


Fig. 2



510a

TopType \* — 524

Entity \* — 526

Group \* — 522

Immortal Entity \* — 512

Individuated Entity

- Area \*
- Celestial Body \*
- Individuated Functional Entity
- Individuated Instrumental Entity
- Communication Medium \*
- Financial instrument

Mutual Fund

- Payment Instrument
- Individuated Tool Entity PartOf
- Representational Artifact \*
- Social Entity \*
- Sound \*
- Source \*
- Virtual Object \*
- Visual Image \*
- Material Entity \*

**Mutual Fund**

"a Complex GLEntity" — 550

formal: #([[Company]] [[Financial Instrument]])

indirectAgentive: [[Found Activity]]

directTelic: [[Business Activity]]

\*instrumentTelic: [[Invest Activity]]

genre: [[Genre]]

location: [[Locative Relation]]

**mutual fund - 2**

"a CollocationalNounEntry"

type: [[Mutual Fund]]

name: mutual fund — 540

Create Edit X-O-Mal Copy Rename Delete Multiple Del Find Change Type Change Types

F 15 4

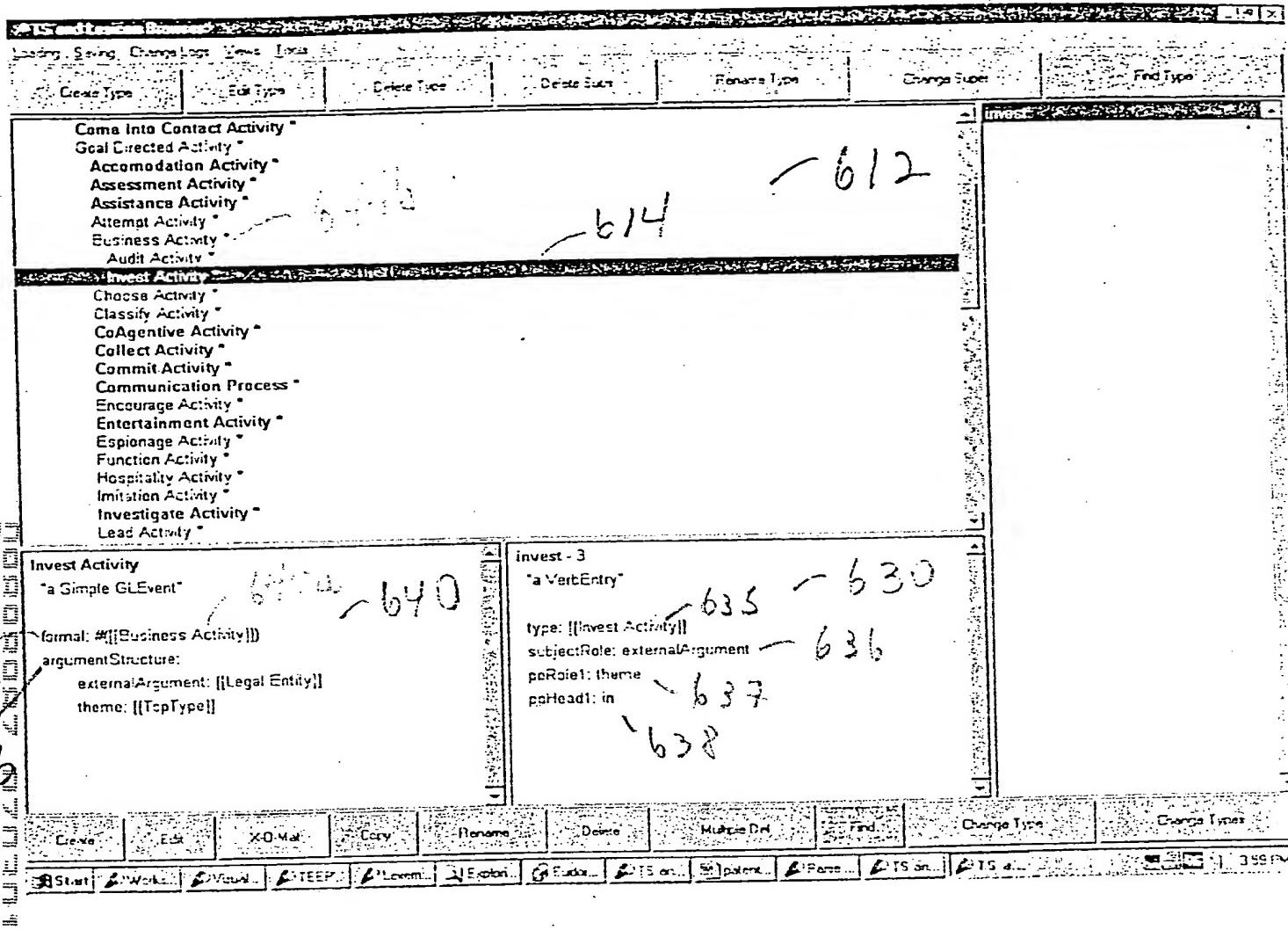


Fig. 5

6 0 2 0 1 0 0 0 0 0 0 0

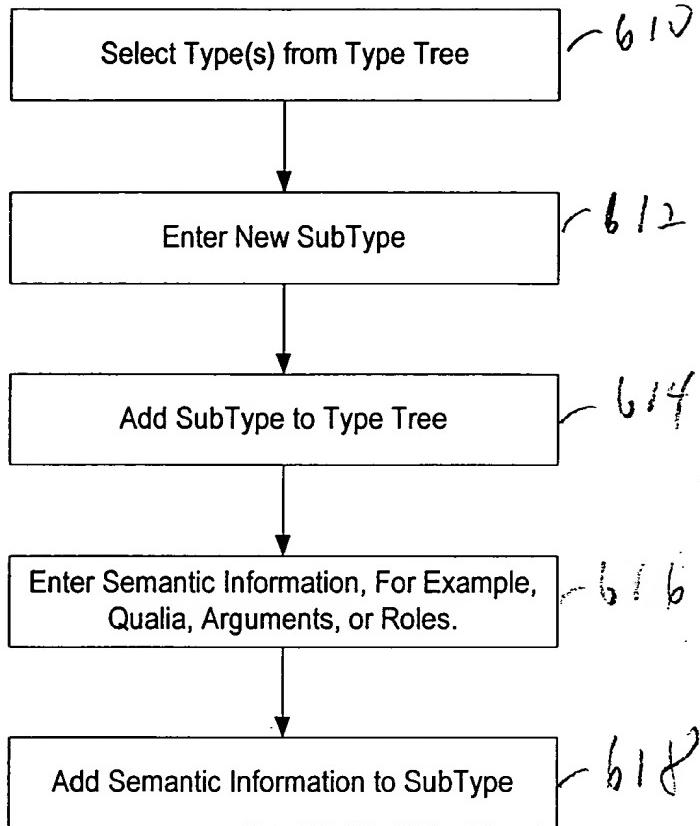


FIG. 6A

640 641 642 643 644 645 646 647 648

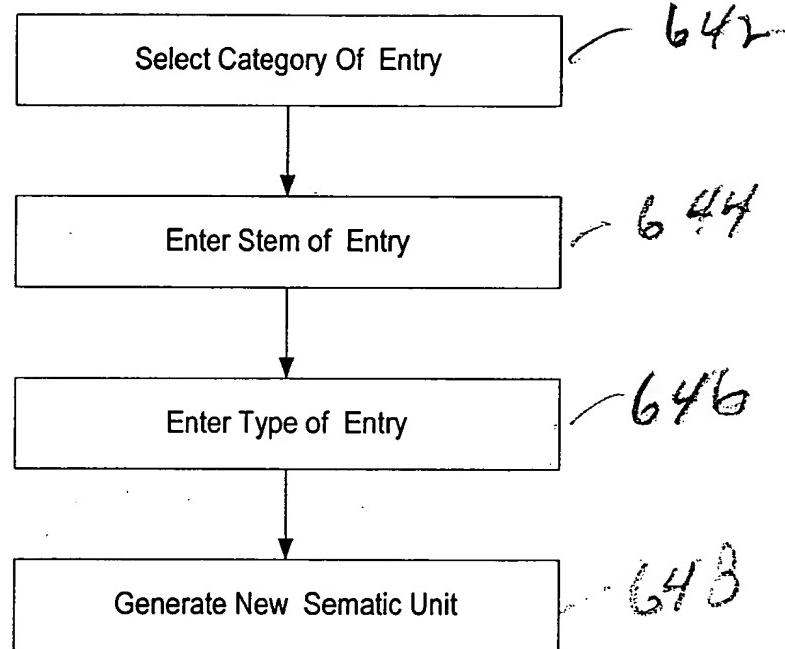


FIG. 6B

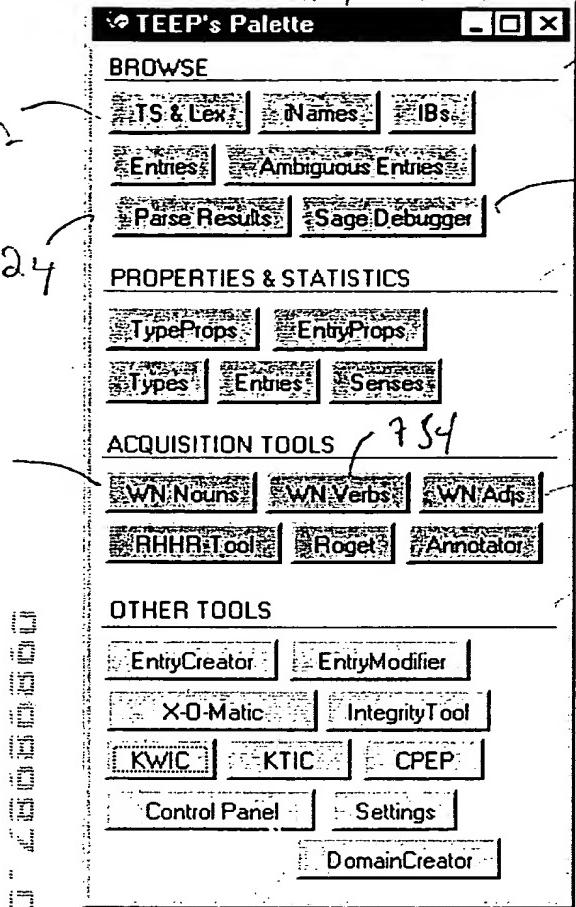
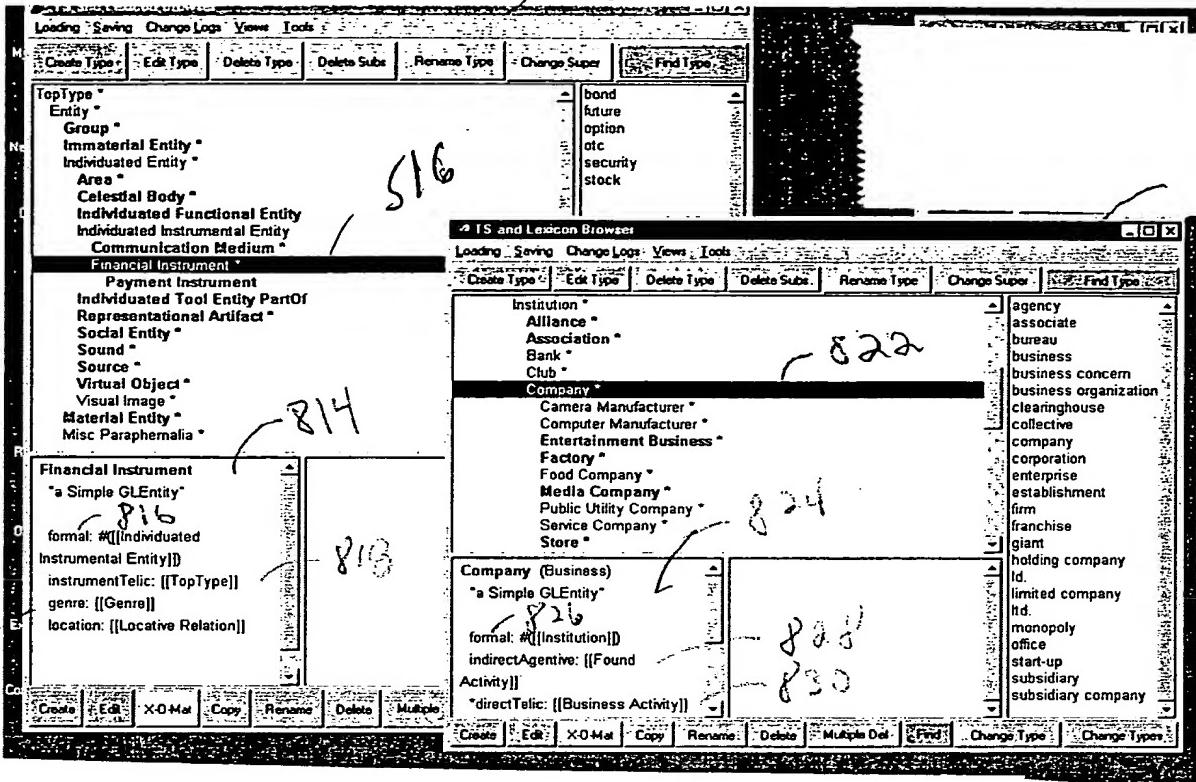


FIG 7

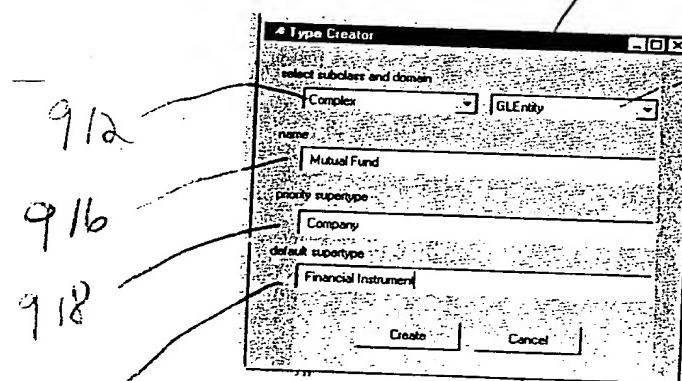


810b

F 15 8

910

914



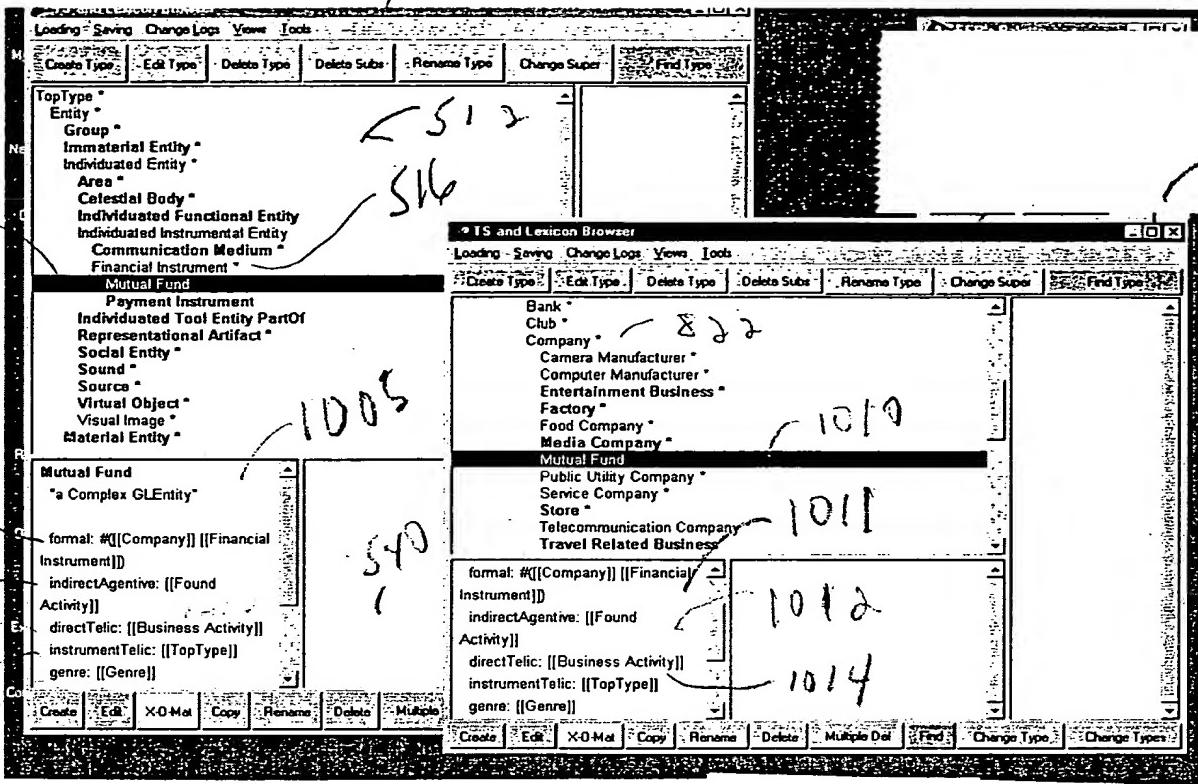
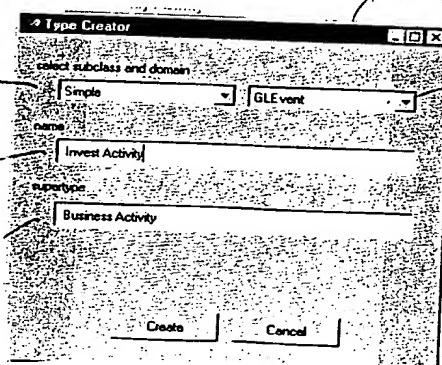
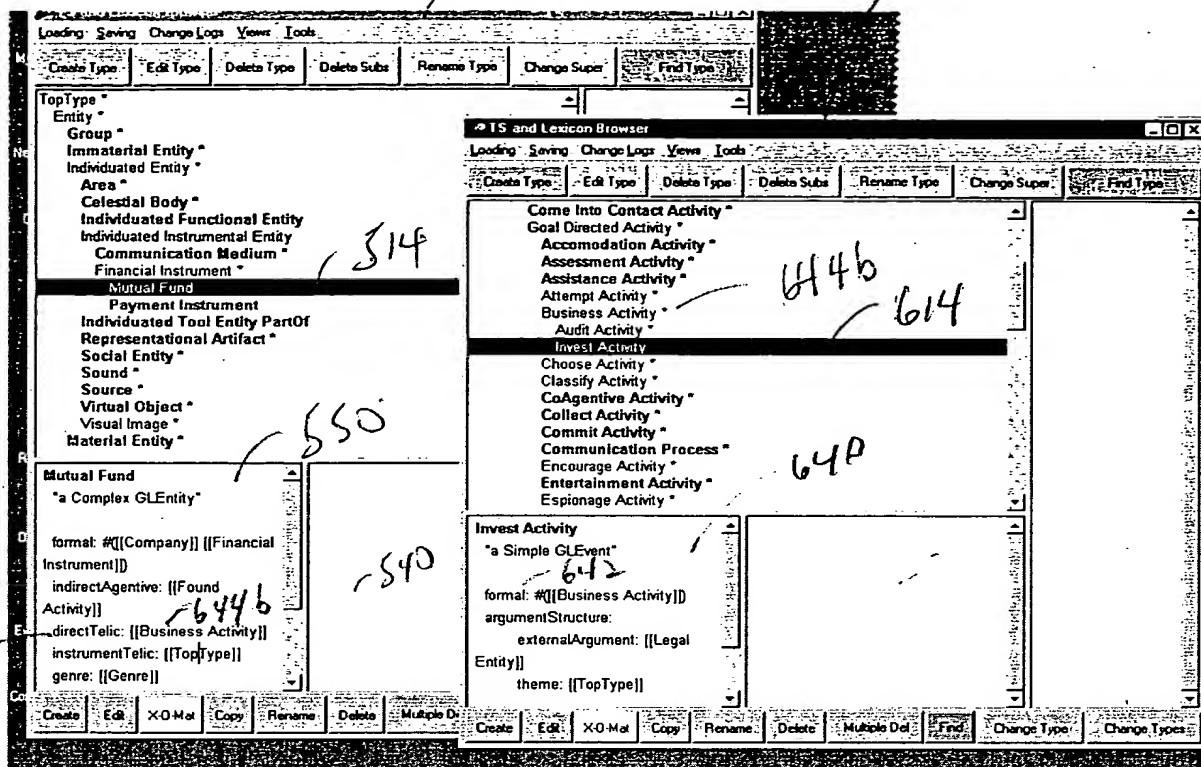


Fig 10





F 1 g . 12

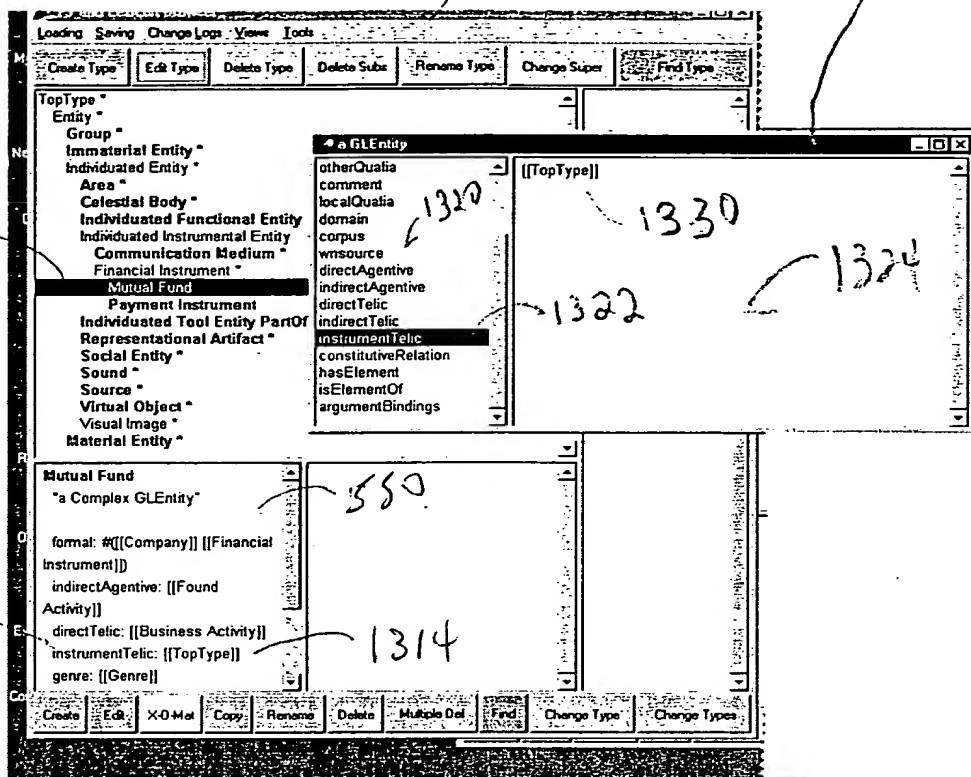
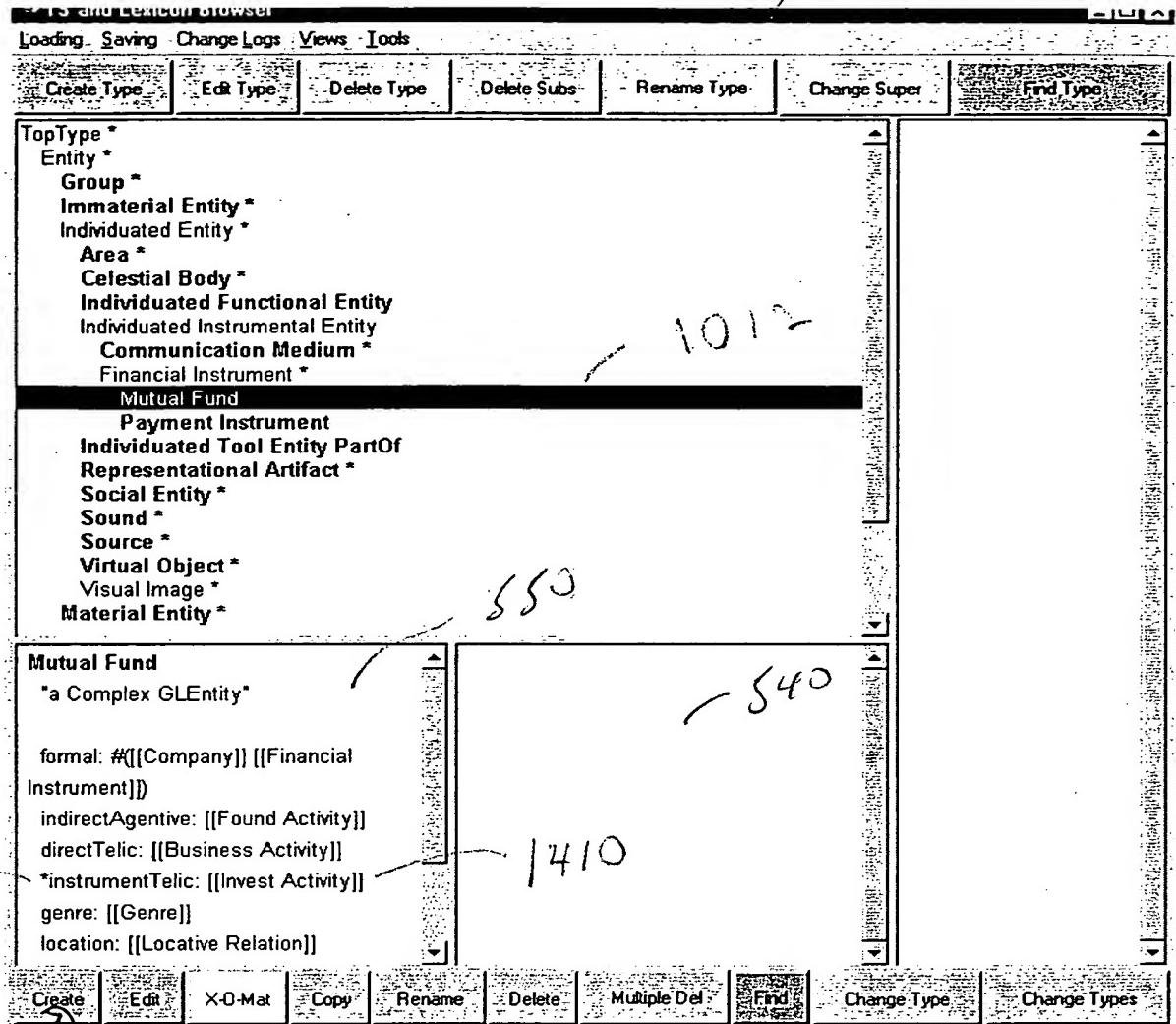
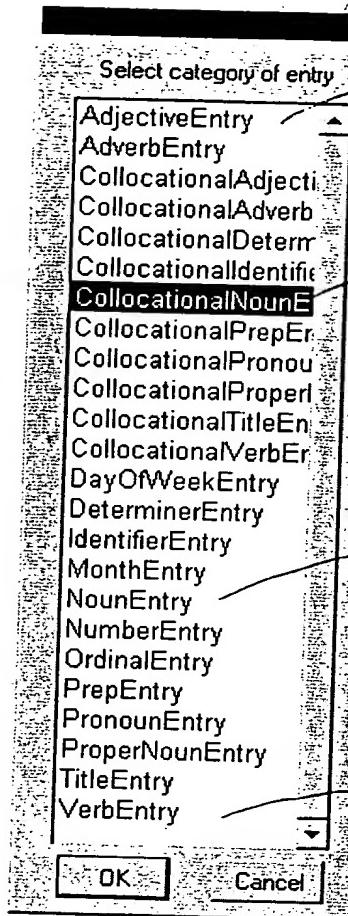
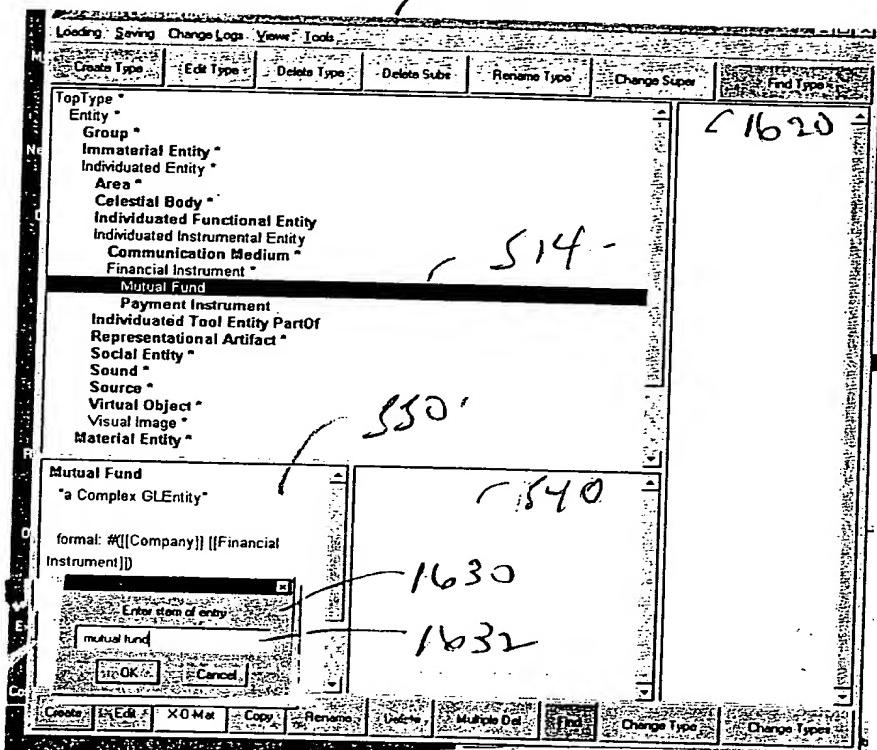


Fig 13



W O E U C G " C B O S O B O C





602120 260308000

800

TS and Lexicon Browser

File Edit Logs Views Tools

Create Type Edit Type Delete Type Delete Subs Rename Type Change Super Find Type

**TopType \***  
**Entity \***  
**Group \***  
**Immaterial Entity \***  
**Individuated Entity \***  
**Area \***  
**Celestial Body \***  
**Individuated Functional Entity**  
**Individuated Instrumental Entity**  
**Communication Medium \***  
**Financial Instrument \***  
**Mutual Fund \***  
**Payment Instrument**  
**Individuated Tool Entity PartOf**  
**Representational Artifact \***  
**Social Entity \***  
**Sound \***  
**Source \***  
**Virtual Object \***  
**Visual Image \***  
**Material Entity \***

*✓ 314*

**Mutual Fund**  
 "a Complex GLEntity"  
 formal: #([[Company]] [[Financial Instrument]])  
 indirectAgentive: [[Found Activity]]  
 directTelic: [[Business Activity]]  
 \*instrumentTelic: [[Invest Activity]]  
 genre: [[Genre]]  
 location: [[Locative Relation]]

*✓ 350*

**mutual fund - 2**  
 "a CollocationalNounEntry" *7722*  
 type: [[Mutual Fund]] - *542*  
 name: mutual fund

*✓ 1720*

*✓ 342*

*✓ 1726*

*✓ 1410*

**Create Edit X-O-Mat Copy Rename Delete Multiple Del Find Change Type Change Types**

*✓ 1315*

Fig 17

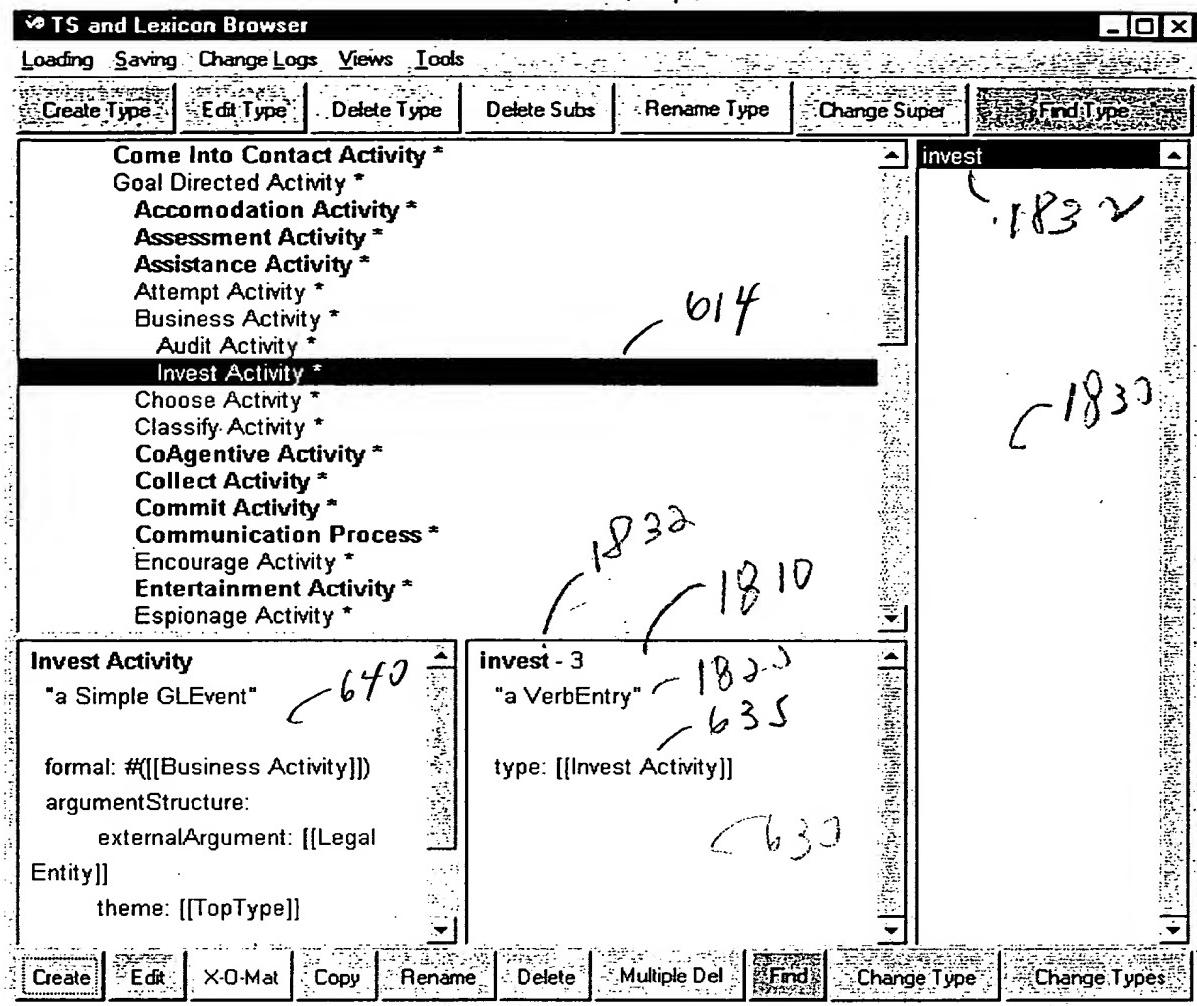


Fig 18

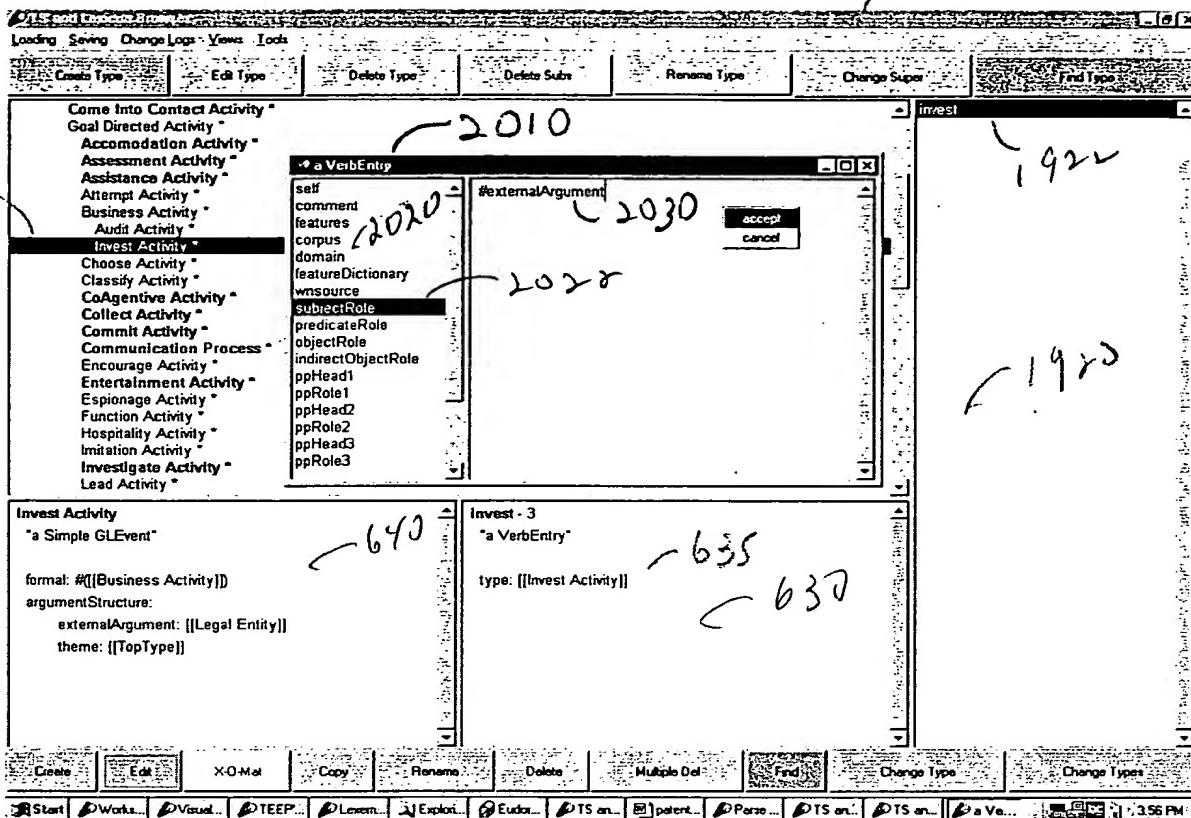
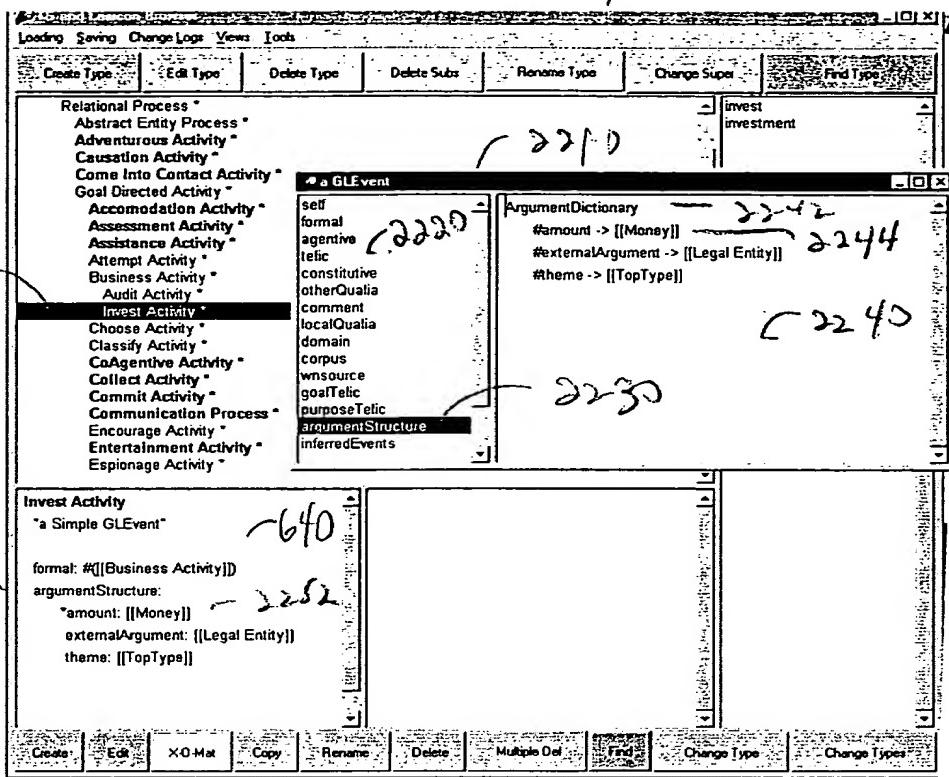


Fig 19



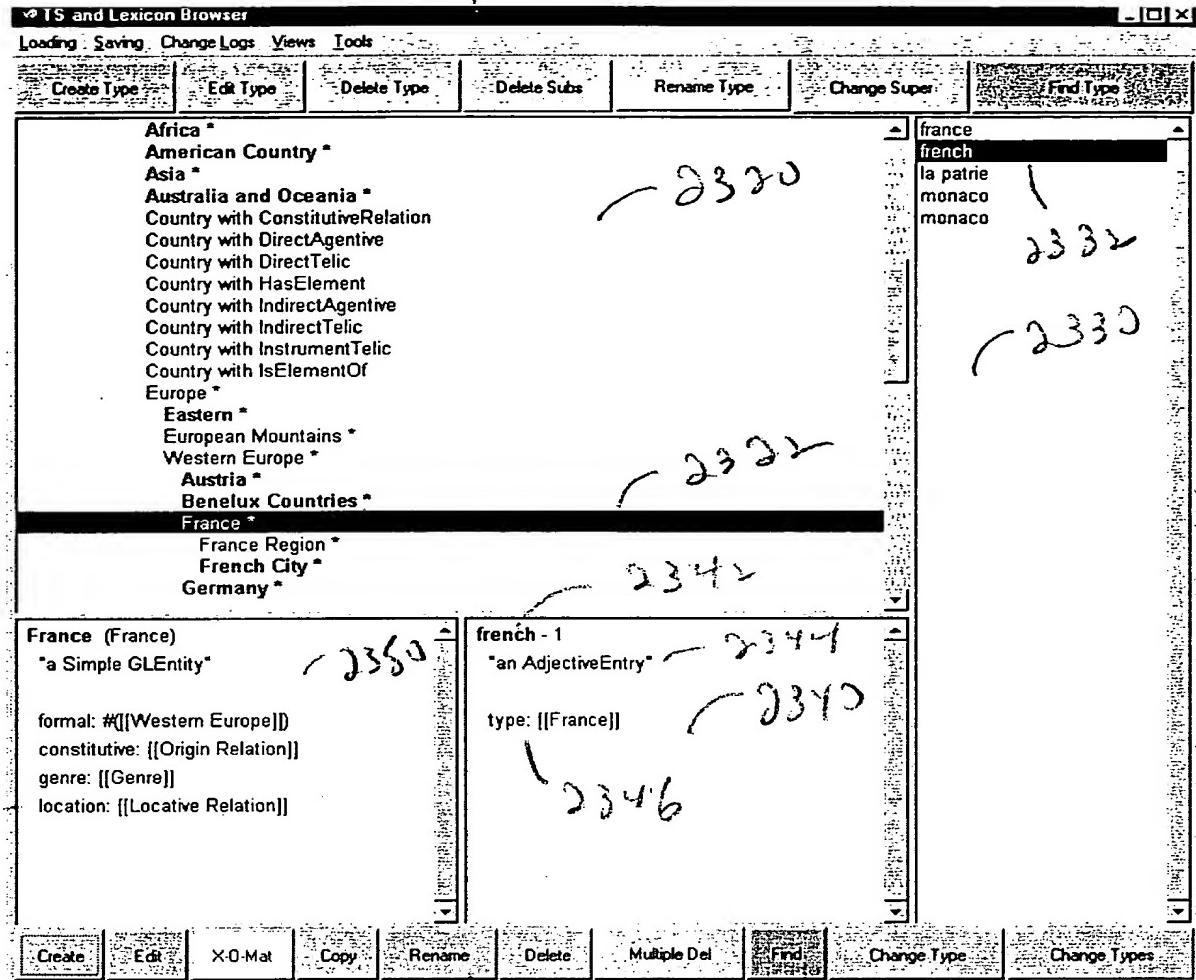


Fig 21

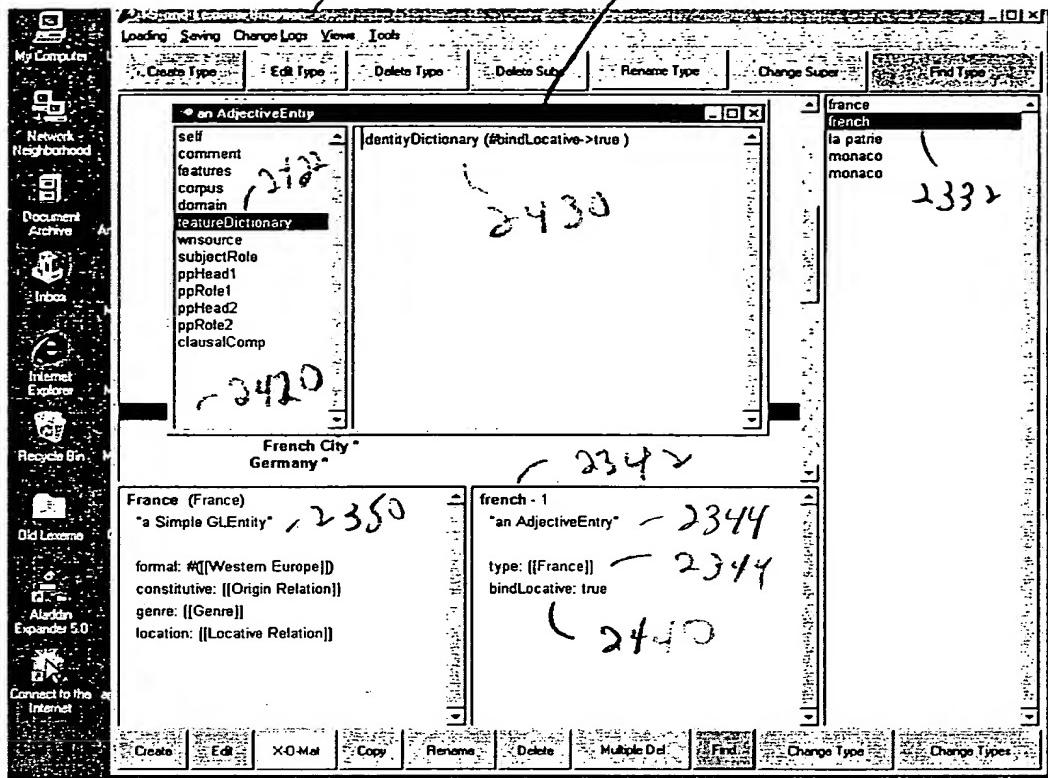
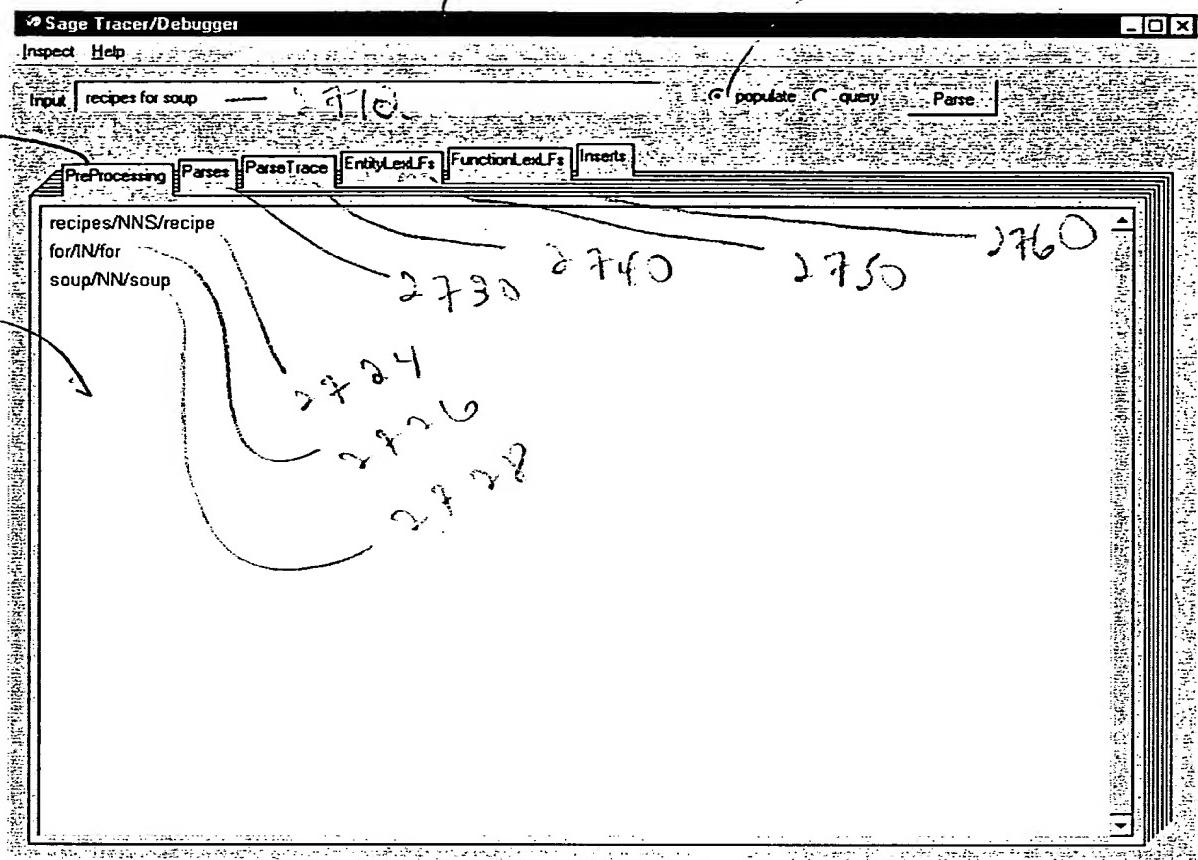


Fig 22



F<sub>1</sub> 23

• Sage Tracer/Debugger

Input: recipes for soup

Processing: Parser, ParseTrace, EntityLexLF, FunctionLexLF, Inserts

active edges: inactive edges:

```
<Edge 1-4: Utterance => NP >
<Edge 1-4: NP => NP_PP >
<Edge 1-2: Utterance => NP >
<Edge 1-2: NP => CoreNP >
<Edge 1-2: CoreNP => NBar >
<Edge 1-2: NBar => N >
<Edge 1-2: N => N >
```

String: recipes for soup

Rule: <Utterance => "NPs"

Utterance

```
NP
NP
CoreNP
NBar
recipes
PP
for
NP
CoreNP
NBar
soup
```

2812 2822 2824 2820a 2830 2832 2840a 2910

EntityLexLF

- type: [[Question]]
- string: recipes for soup
- illocutionaryForce: Selection
- content: [[EntityLexLF
  - type: [[Recipes]]
  - value: recipe
  - directTelic: [[FunctionLexLF
    - type: [[Prepare Food Activity]]
    - externalArgument: [[EntityLexLF
      - type: [[Recipes]]
      - value: recipe ||
- theme: [[EntityLexLF]]

• Sage Tracer/Debugger

Input: recipes for soup

Processing: Parser, ParseTrace, EntityLexLF, FunctionLexLF, Inserts

active edges: inactive edges:

```
<Edge 1-2: AdjBar => NBar . Punctuation AdjBar >
<Edge 1-2: AdjBar => NBar . AdjBar >
<Edge 1-2: NP => NP . ComplementVP >
<Edge 1-2: NP => NP . RelS >
<Edge 1-2: NP => NP . Punctuation ConjNP >
<Edge 1-2: NP => NP . Punctuation NP >
<Edge 1-2: NP => NP . ConjNP >
<Edge 1-2: NP => NP . PP >
<Edge 1-2: DeterminerGroup => NP . POS >
<Edge 1-2: ComplementS => NP . VP >
<Edge 1-2: RootS => NP . VP >
<Edge 1-2: Utterance => NP . EndPunct >
```

String: recipes

Rule: <NP => "NP\_PP (TakesPPComplement) [PPComplementForNP]>"

EntityLexLF

- type: [[Recipes]]
- value: recipe
- directTelic: [[FunctionLexLF
  - type: [[Prepare Food Activity]]
  - externalArgument: [[EntityLexLF
    - type: [[Recipes]]
    - value: recipe ||

- theme: [[EntityLexLF
- type: [[Soup]]
- value: soup || ||

2910 2820b 2930 2940b 2950 2960 2970

2740

2710

3010

The screenshot shows a window titled "Sage Tracer/Debugger" with the input "recipes for soup". The log area displays a series of grammar rules being applied, categorized into "Adding inactive edge" and "Adding active edge". The rules include various NLP components like N, NBar, CoreNP, NP, VP, etc., and specific patterns like Utterance, RootS, ComplementS, DeterminerGroup, RelS, and ConjNP.

```

Input: recipes for soup
C populate C query Parse

PreProcessing Parser ParseTrace EntityLexLFs FunctionLexLFs Insert

Adding inactive edge: <Edge 1-2: N => N . >
Adding inactive edge: <Edge 1-2: NBar => N . >
Adding inactive edge: <Edge 1-2: CoreNP => NBar . >
Adding inactive edge: <Edge 1-2: NP => CoreNP . >
Adding inactive edge: <Edge 1-2: Utterance => NP . >
Adding active edge: <Edge 1-2: Utterance => NP . EndPunct >
Adding active edge: <Edge 1-2: RootS => NP . VP >
Adding active edge: <Edge 1-2: ComplementS => NP . VP >
Adding active edge: <Edge 1-2: DeterminerGroup => NP . POS >
Adding active edge: <Edge 1-2: NP => NP . PP >
Adding active edge: <Edge 1-2: NP => NP . ConjNP >
Adding active edge: <Edge 1-2: NP => NP . PunctuationNP >
Adding active edge: <Edge 1-2: NP => NP . PunctuationConjNP >
Adding active edge: <Edge 1-2: NP => NP . RelS >
Adding active edge: <Edge 1-2: NP => NP . ComplementVP >
Adding active edge: <Edge 1-2: AdjBar => NBar . AdjBar >
Adding active edge: <Edge 1-2: AdjBar => NBar . PunctuationAdjBar >
Adding inactive edge: <Edge 2-3: Prep => Prep . >
Adding active edge: <Edge 2-3: PP => Prep . NP >
Adding active edge: <Edge 2-3: AdvP => Prep . DayOfWeek >
Adding inactive edge: <Edge 3-4: N => N . >
Adding inactive edge: <Edge 3-4: NBar => N . >
Adding inactive edge: <Edge 3-4: CoreNP => NBar . >
Adding inactive edge: <Edge 3-4: NP => CoreNP . >
Adding active edge: <Edge 3-4: ComplementS => NP . VP >
Adding active edge: <Edge 3-4: DeterminerGroup => NP . POS >
Adding active edge: <Edge 3-4: NP => NP . PP >
Adding active edge: <Edge 3-4: NP => NP . ConjNP >

```

Fig 26 a

2710

```

Sage Tracer/Debugger
File Edit View Help
Input: recipes for soup
G populate C query Parse
PreProcessing Parser ParseTrace EntityLexLFs FunctionLexLFs Insert
Adding inactive edge: <Edge 3-4: NP => CoreNP . >
Adding active edge: <Edge 3-4: ComplementS => NP . VP >
Adding active edge: <Edge 3-4: DeterminerGroup => NP . POS >
Adding active edge: <Edge 3-4: NP => NP . PP >
Adding active edge: <Edge 3-4: NP => NP . Conj NP >
Adding active edge: <Edge 3-4: NP => NP . Punctuation NP >
Adding active edge: <Edge 3-4: NP => NP . Punctuation Conj NP >
Adding active edge: <Edge 3-4: NP => NP . RelS >
Adding active edge: <Edge 3-4: NP => NP . ComplementVP >
Matching <Edge 2-3: PP => Prep . NP > with <Edge 3-4: NP => CoreNP . >
Adding inactive edge: <Edge 2-4: PP => Prep NP . >
Matching <Edge 1-2: NP => NP . PP > with <Edge 2-4: PP => Prep NP . >
Adding inactive edge: <Edge 1-4: NP => NP PP . >
Adding inactive edge: <Edge 1-4: Utterance => NP . >
Adding active edge: <Edge 1-4: Utterance => NP . EndPunct >
Adding active edge: <Edge 1-4: RootS => NP . VP >
Adding active edge: <Edge 1-4: ComplementS => NP . VP >
Adding active edge: <Edge 1-4: DeterminerGroup => NP . POS >
Adding active edge: <Edge 1-4: NP => NP . PP >
Adding active edge: <Edge 1-4: NP => NP . Conj NP >
Adding active edge: <Edge 1-4: NP => NP . Punctuation NP >
Adding active edge: <Edge 1-4: NP => NP . Punctuation Conj NP >
Adding active edge: <Edge 1-4: NP => NP . RelS >
Adding active edge: <Edge 1-4: NP => NP . ComplementVP >
Adding active edge: <Edge 3-4: AdjBar => NBar . AdjBar >
Adding active edge: <Edge 3-4: AdjBar => NBar . Punctuation AdjBar >
Adding active edge: <Edge 3-4: NBar => N . NBar >

```

3020

Fig 26b

6 0 2 10 2 0 0 0 0 0 0 0 0 0

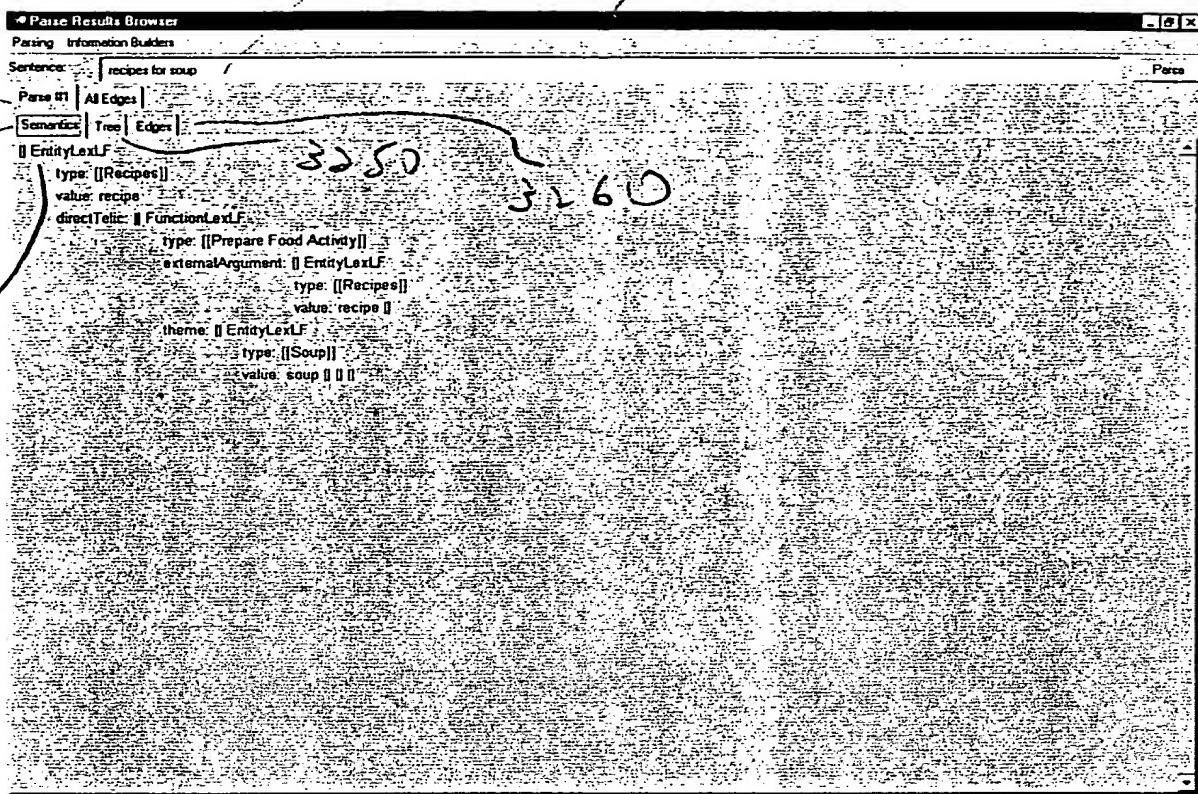


Fig 27

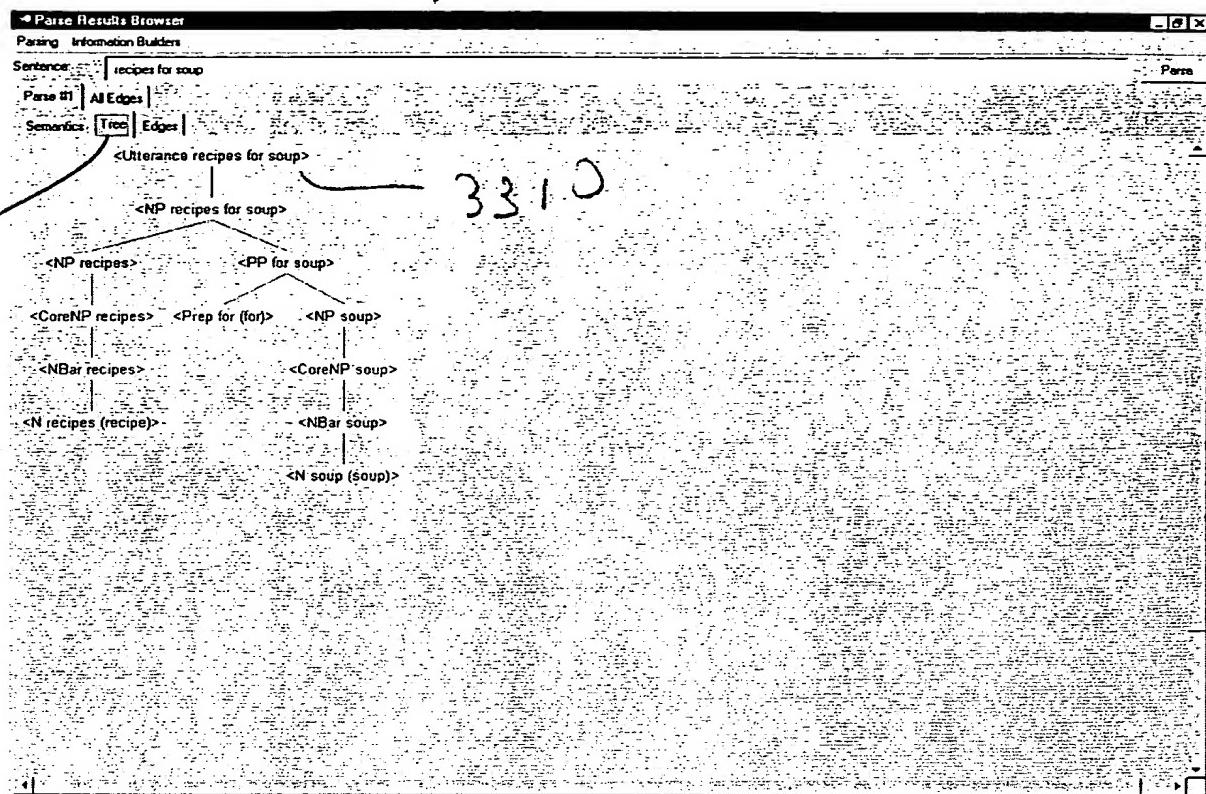


Fig 28

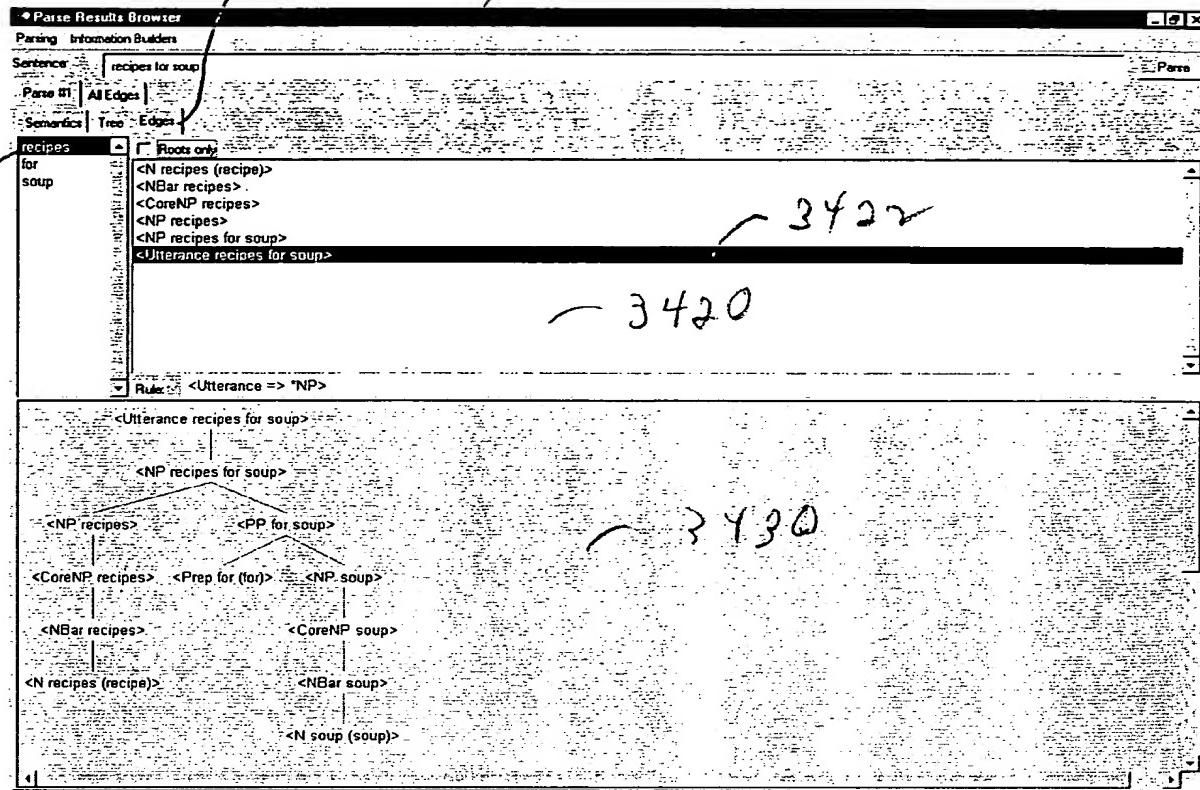


Fig 29

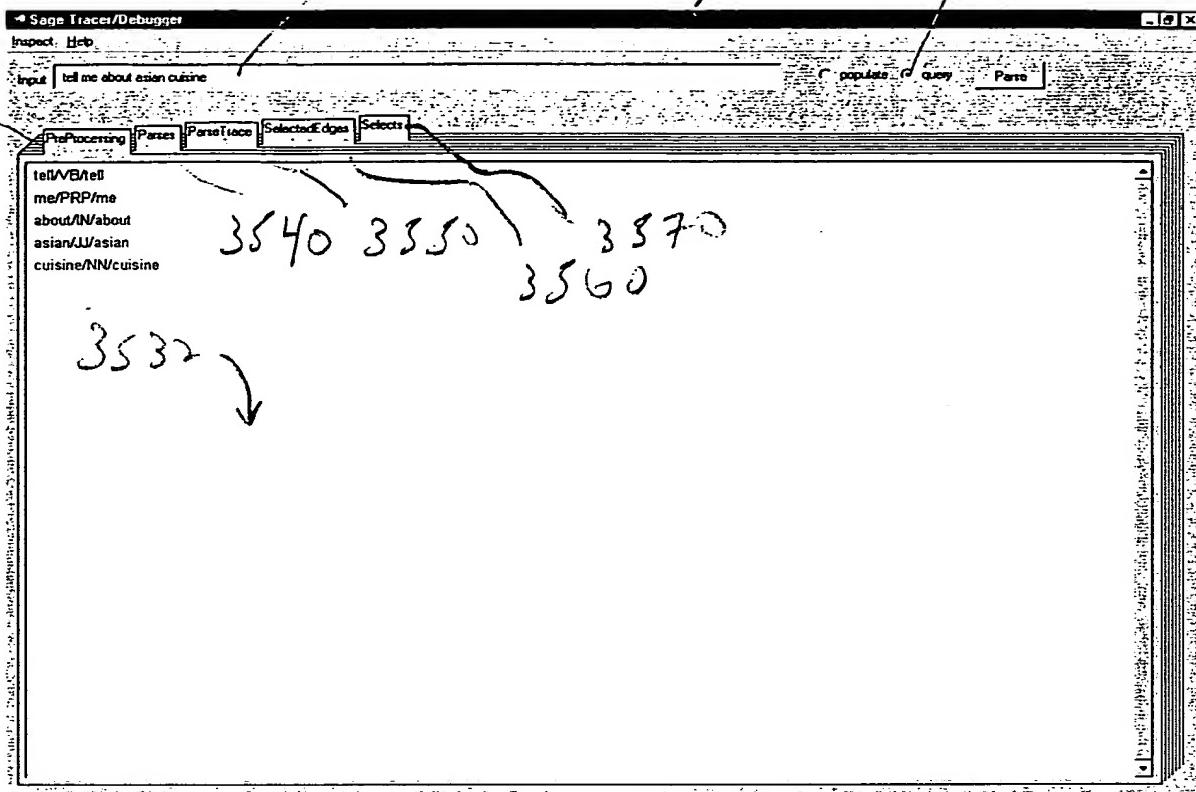


Fig 3D

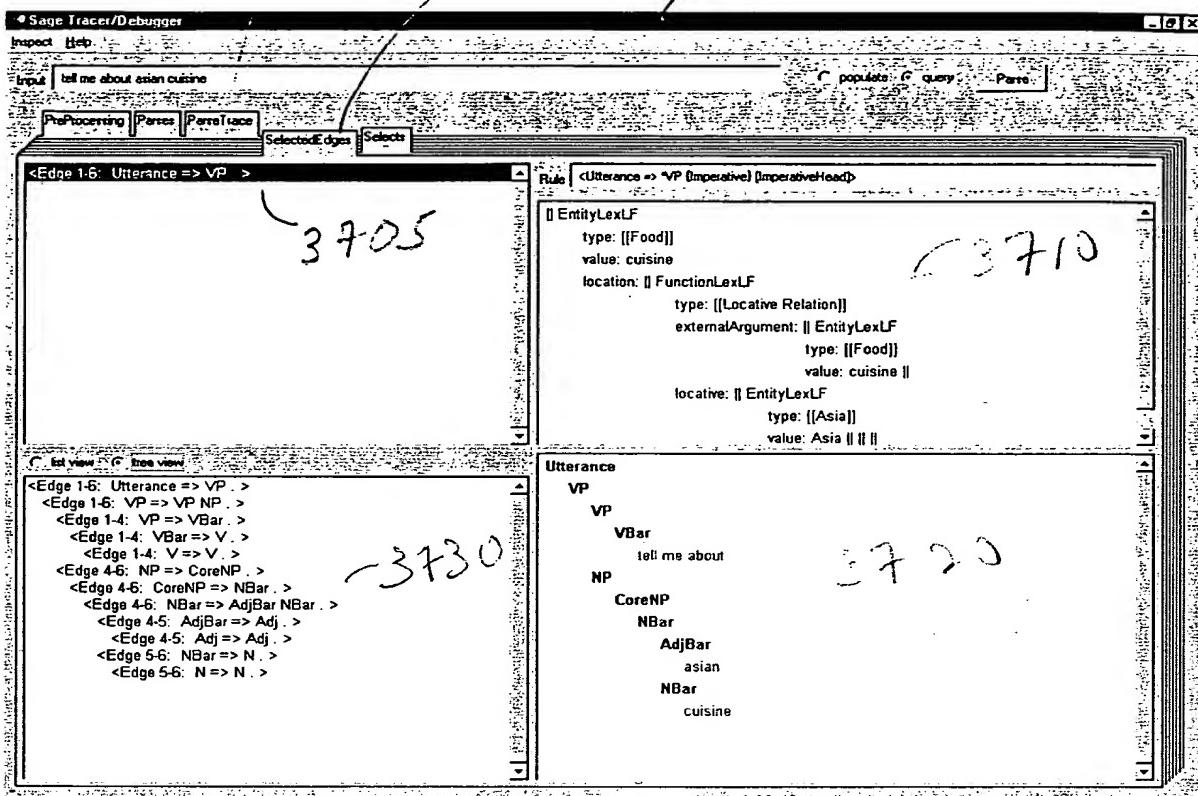


Fig 3.1